

REMARKS

Claims 1, 4 and 9 through 12 are pending in this Application. Claim 1 has been amended, claims 7 and 8 cancelled and new claims 9 through 12 added. Care has been exercised to avoid the introduction of new matter. Adequate descriptive support for the present Amendment should be apparent throughout the originally filed disclosure, noting that the limitations of claims 7 and 8 have been incorporated into claim 1, and claims 7 and 8 cancelled. Applicants submit that the present Amendment does not generate any new matter issue.

Claims 1 and 4 were rejected under 35 U.S.C. § 102 for lack of novelty as evidenced by Sato et al.

In the statement of the rejection the Examiner identified various elements disclosed by Sato et al, asserting that Sato et al. disclose an optical module corresponding to that claimed.

This rejection is traversed. Indeed, this rejection has been rendered moot by incorporating the limitations of claims 7 and 8 into independent claim 1, claims 7 and 8 not being subject to this rejection. Accordingly, withdrawal of the rejection of claims 1 and 4 under 35 U.S.C. § 102 for lack of novelty as evidenced by Sato et al. is solicited.

Claims 7 and 8 were rejected under 35 U.S.C. § 103 for obviousness predicated upon Sato et al. in view of Anderson et al.¹

In the statement of the rejection the Examiner made certain determinations as to the teachings of Sato et al., admitting that Sato et al. do not disclose that the opening has an inner surface sloped from the cover to the substrate. The Examiner then concluded that one having

¹ Applicants will treat this rejection as though applied against claims 1 and 4, because the limitations of claims 7 and 8 have been incorporated into claim 1, and claim 4 depends upon claim 1.

ordinary skill in the art would have been motivated to modify the optical module disclosed by Sato et al. by sloping the surface of the housing in view of Anderson et al. In responding to the arguments advanced in the responsive Amendment dated September 19, 2005, the Examiner asserted that argued features were not recited in the claims. This rejection is traversed.

Applicants submit that there are significant differences between the claimed optical module on the one hand, and the module disclosed by each of the applied references that undermine the obviousness conclusion under 35 U.S.C. § 103. This is because even if the applied references are combined as suggested by the Examiner, and Applicants do not agree that the requisite fact-based motivation has been established, the claimed invention would not result. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988).

The claimed optical module comprises an arrangement to secure thermal coupling between the electronic circuit and the cover via the thermal block by plugging the thermal block into the opening provided in the base. The electronic circuit is exposed within the opening. One end of the thermal block comes in contact with the circuit and the other end in contact with the cover, by pressing the thermal block with a cover when the cover is assembled with the base. As specified in independent claim 1, the inner surface of the opening slopes from the cover to the substrate, and the outer surface of the thermal block fits or traces the inner surface of the opening. Therefore, if the inner surface of the opening and the outer shape of the thermal block do not have fitting slopes, the thermal block will intensively press on the substrate causing breakage of the circuit element. However, in accordance with the present invention, corresponding slopes are formed in the opening and the thermal block, thereby enabling the slope to function as a stopper during pressing without damaging the circuit element. Neither the

claimed structure nor the advantages attendant therefrom are disclosed or suggested by the applied references, taken singly or in combination.

As pointed out above, there are significant differences between the claimed optical module and that disclosed by the applied references that undermine the obviousness conclusion under 35 U.S.C. § 103. Specifically, Applicants disagree with the Examiner's determination that the metal base 2 of the module disclosed by Sato et al. encloses the optical subassembly. The Examiner referred to a metal base by reference character 2, apparently intending Figs. 15A and 15B. However, it should be apparent from paragraph [0006] that the illustrated optical data link comprising housing base member 2 made of metal is **prior art** with respect to Sato et al. The relation between member 2 and subassembly 6 in these figures is such that the assembly 6 appears to be held or secured by member 2. However, it is **not** apparent that subassembly 6 is **enclosed within** member 2. Therefore, the Examiner's determination is not supported by facts. As illustrated in Fig. 3 of the present Application, subassembly 15 of the present invention is **enclosed** within the base 11.

Further, the Examiner determined that member 2 of Sato et al., which the Examiner regarded as the base, has an opening through which the lead pin passes and the lead pin may be regarded as one of the circuit elements. Therefore, the opening for the lead pin provided in member 2 may be said to correspond to the opening provided in the base of the claimed module. However, the Examiner's attention is invited to the thermal block of the present invention. The Examiner regarded member 60 in Fig. 12 of Sato et al. as the thermal block of the present invention. However, member 60 of Sato et al. comes in contact with both the substrate 26 and the cover 28. Moreover, according to a disclosure of Sato et al., member 60 is provided to conduct heat generated by the circuit element on the substrate 26 to the cover. However, in

accordance with claim 1, the thermal block is arranged to cover or plug the opening provided in the base.

As previously pointed out, the Examiner determined that the opening in the base corresponds to the hole through which the lead pin passes and, because the lead pin passes through this hole, the hole may expose the lead pin that may be regarded as one of the circuit components. However, the Examiner ignores the fact that independent claim 1 requires the thermal block to cover or plug the opening. The thermal block is used as a component of the optical module, since one end thereof comes in contact with the electronic circuit exposed within the opening while the other end is in contact with a metal cover by covering or plugging the opening. Accordingly, while it may be argued that member 60 of Sato et al. conducts heat from the circuit to the cover, it is not apparent and it would not appear that member 60 covers or plugs the hole that is filled within the lead pin.

The above differences are not the only differences between the claimed invention and the module of Sato et al. Specifically, member 60 of Sato et al. is provided in module 20b, which is illustrated in Figs. 8 through 14, with member 22 as the base. On the other hand, member 2, which the Examiner regarded as the base, is for a conventional module in the disclosure of Sato et al., and this conventional module does not have thermal block 60. Member 22 of the module disclosed by Sato et al. forms some openings, such as 22f and 22g illustrated in Fig. 3. However, when member 60 covers or plugs these openings 22f, 22g, member 60 may come in contact with the circuit of the substrate 60, but is not able to come in contact with the cover 28, which fails to secure a heat dissipating path from the circuit to the cover.

As previously pointed out, in accordance with the present invention, an arrangement is provided to secure thermal coupling between the electronic circuit and the cover via the thermal

block by plugging the thermal block into the opening provided in the base. The electronic circuit is exposed within the opening. One end of the thermal block comes in contact with the circuit and the other end comes in contact with the cover, when the cover is assembled and pressed to the thermal block. However, in the configuration illustrated by Sato et al., even if the thermal block penetrates the opening 22f, 22g and one end thereof comes into contact with the electronic circuit, the heat dissipating efficiency is degraded when the other end of the thermal block is not effectively contacted, because the heat dissipation is restricted to radiation from the other end of the thermal block.

The deficiencies of Sato et al. are not cured by Anderson et al. The Examiner appears to rely upon an adhesive with a curved surface 122 illustrated in Fig. 2 of Anderson et al. However, in the disclosure of Anderson et al., the adhesive merely has a slant surface. It is not apparent wherein Anderson et al. disclose or suggest that the slant surface is part of the surfaces constituting the opening in the base, and that the thermal block is plugged within the opening, and one surface of the thermal block traces this slant surface. Applicants stress that the disclosed slant surface is the surface of the adhesive, **not the opening to be plugged with the thermal block.**

Based upon the foregoing it should be apparent that the module of Sato et al. is completely different from that of the claimed invention, particularly with regard to the thermal block and the base, and the opening provided in the base. Again, as previously pointed out, independent claim 1 specifies that the inner surface of the opening slopes from the cover to the substrate, and the outer surface of the block fits or traces the inner surface of the opening. The thermal block is pressed by the cover when the cover is assembled with the base. Therefore, when the inner surface of the opening and the outer surface of the thermal block do not have the

same slope, this thermal block will intensively press the substrate causing breakage of the circuit element. However, in accordance with the present invention, the slope is formed in the opening and on the thermal block, thereby permitting the slope to function as a stopper during pressing.

The above argued differences between the claimed module and the module disclosed by each of the applied references preclude the conclusion that the combined disclosures of the applied references would yield the claimed invention. *Uniroyal, Inc. v. Rudkin-Wiley Corp., supra*. Applicants, therefore, submit that the imposed rejection of claims 7 and 8 (treated as though applied against claims 1 and 4) under 35 U.S.C. § 103 for obviousness predicated upon Sato et al. in view of Anderson et al. is not factually or legally viable and, hence, solicit withdrawal thereof.

New claims 9 through 12.

New claims 9 through 12 are clearly free of the applied prior art by virtue of the dependence upon independent claim 1, the patentability of which has been argued *supra*. Further, the separate patentability of claims 9 through 12 is solicited based upon the limitations set forth therein. Specifically, claims 9 and 10 define a material of the thermal block and the base, respectively. Claim 11 defines the optical device and in the transmitting optical subassembly as a laser diode. Claim 12 requires a specific structural arrangement for the opening in the base and the thermal block. Accordingly, claims 9 through 12 are free of the applied prior art.

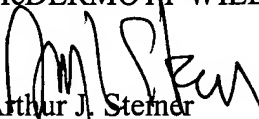
Based upon the foregoing it should be apparent that the imposed rejections have been overcome, and that all pending claims are in condition for immediate allowance. Favorable consideration is, therefore, solicited.

Application No.: 10/669,098

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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